

It would seem that the discovery of bodies that have all the megascopic features of sporocarps, that cannot be referred to any other known elements of the associated flora, in association with foliage, which in habit, form, and venation independently suggests comparisons with the genus *Marsilea*, at two such remote localities as Sweden and western Canada, is strong presumptive proof of relationship. Moreover, these two occurrences are very different in age, thus showing no obvious change in the sporocarps during the time that elapsed between the Rhaetic and the mid-Cretaceous, a time interval of at least several million years, and comparable in magnitude with the time that has elapsed from the mid-Cretaceous to the present. If these sporocarps preserve their appearance during the older interval, this conservative feature becomes an argument of validity in comparing their latest occurrence with the *Marsilea* sporocarps of the present.

The evidence, then, that *Sagenopteris* is related to the recent Hydropteraceae is about as conclusive as we can hope to secure in the absence of structural material, which is present in about 0.0001 per cent of the cases with which the paleobotanist has to deal.—EDWARD W. BERRY, *Johns Hopkins University, Baltimore, Md.*

A BISPORANGIATE SPOROPHYLL OF *LYCOPODIUM LUCIDULUM*

(WITH ONE FIGURE)

The occurrence of more than a single sporangium on a sporophyll in *Lycopodium* is so unusual that it is believed the following account will be of interest.

BOWER¹ records a case in which a sporophyll of *L. rigidum*, from a specimen in the Glasgow University Herbarium, bears "two sporangia of slightly unequal size placed side by side. They are individually smaller than the average sporangia in the near neighborhood on the same axis." BOWER'S statement would hold equally true for a similar case in *L. lucidulum* recently found in the writer's laboratory. As will be noted from fig. 1, the larger of the sporangia shows the normal kidney shape typical of the sporangium of *Lycopodium*, while the smaller has more the form of a football. The relative thicknesses of the two stalks correspond closely to the size of the sporangia. Both stalks are slightly lateral to the

¹ BOWER, F. O., Note on abnormal plurality of sporangia in *Lycopodium rigidum* Gmel. *Ann. Botany* 17:278-280. figs. 18. 1903.

midrib of the leaf, the smaller being the farther removed. Normally the stalk of the single sporangium is immediately above the midrib of the leaf.

The origin of such a situation can only be conjectured. Since the sporangium of *Lycopodium* arises from a transverse row of initials, it is

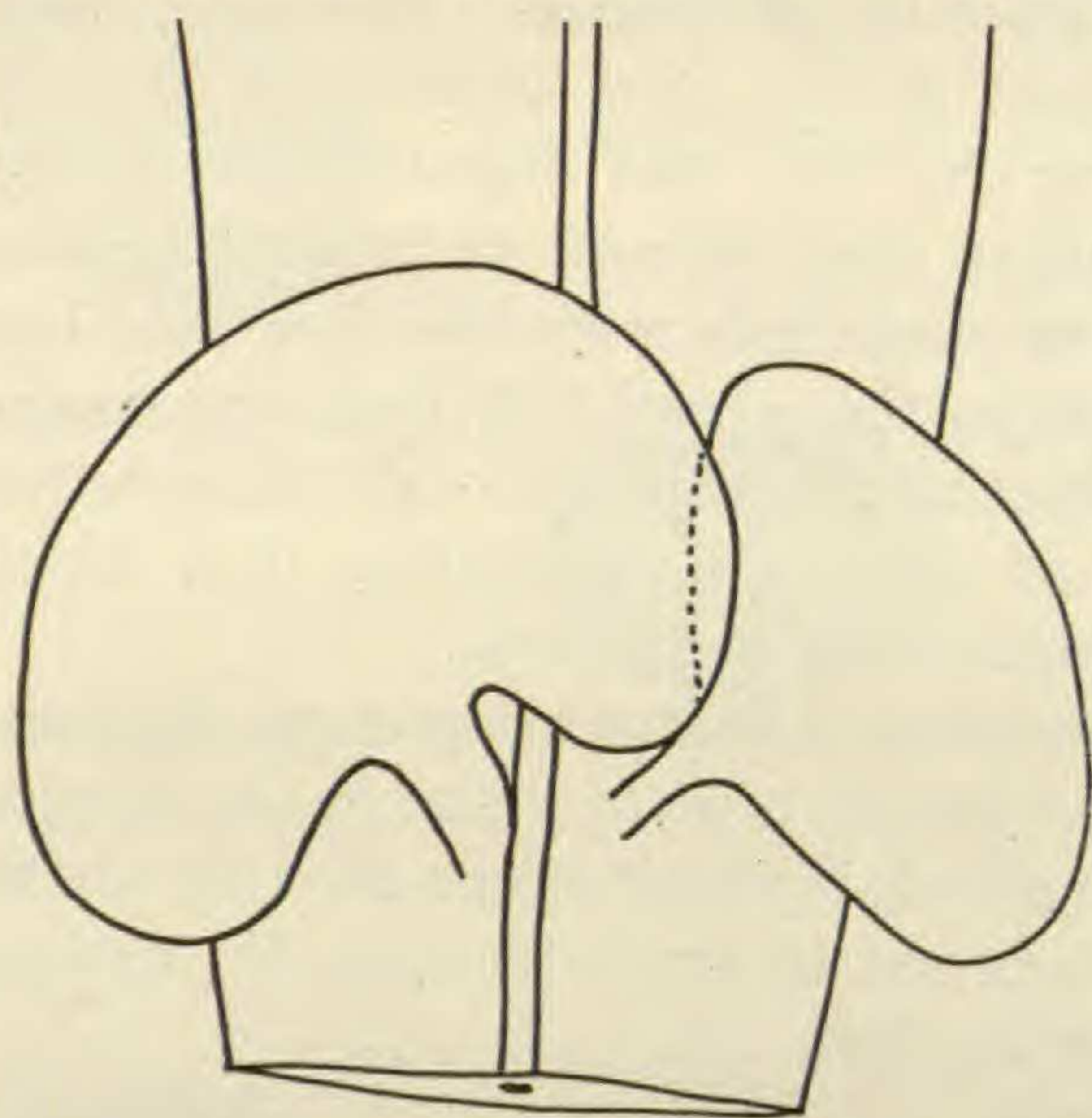


FIG. 1

probable in this case that there was a sterilization of archesporial tissue within this row, separating the two ends of the row, each of which developed to maturity in a practically normal manner, producing the two distinct and separate sporangia.

The formation of the "sub-archesporial pad" in the sporangium of *Lycopodium* may be regarded as a sterilization of potentially sporogenous tissue, which, while not producing complete septation of the sporangium, is suggestive as

a prelude to the complete septation which occurs in other forms, such as *Psilotum*, as a result of the sterilization of complete plates of tissue. In this case the sterilization may be thought of as having occurred so early as to result in two completely distinct sporangia. Whether the polysporangiate condition in Pteridophytes may have arisen in a similar way is of theoretic interest, the synangium being regarded as intermediary between the monosporangiate and the polysporangiate conditions. On the other hand, the two sporangia may have arisen from two distinct groups of initials.

BOWER, concluding his note on *L. rigidum*, states that "it shows how even the most rigid facts of morphological experience are liable to exception, and that this applies equally to spore-bearing members, in cases where their forms seem most stereotyped."

To summarize, (1) bisporangiate sporophylls in *Lycopodium* are very rare, a single case of each being known in *L. rigidum* and *L. lucidulum*; (2) the two sporangia may have arisen as a result of very early sterilization of archesporial tissue, or from two distinct groups of initials.—
A. W. DUPLER, *Juniata College, Huntingdon, Pa.*